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## **The Effect of Corporate Support Programs on Employees' Innovative Behavior: A Cross-Cultural Study**

Motivated by anecdotal evidence on successful innovations that non-managerial employees have proposed, firms expect significant untapped potential for innovation in their workforces (Kuratko, Morris, & Covin, 2011). Therefore, some firms have established corporate support programs for innovation, such as the “i-mentor” program at Whirlpool and Google’s “20% Innovation Time Off” (Baldwin, 2012; Roosen & Nakagawa, 2008). In examining these support programs, academic research finds that corporate support can facilitate innovative employee behavior (e.g., Chandler, Keller, & Lyon, 2000; Janssen, 2005).

However, these studies do not account for nation-level drivers that might impact the strength of the relationship between corporate support and employee’s innovative behavior. Since cross-cultural management research shows that management techniques’ effectiveness varies across the globe (e.g., Newman & Nollen, 1996), the absence of insight into the possibility of nation-dependency is problematic, especially because resource-intensive corporate support programs are often rolled out globally, as in the case of Whirlpool and Google. Academic cross-national research needs to determine whether these programs are universally effective or are bound to specific national circumstances. Therefore, the present research addresses the research question “*Does the impact of corporate support programs on innovative employee behavior differ across nations, and if so, how can differences be explained?*”

This paper establishes a theoretical model to shed light on whether corporate support programs can foster employees’ innovative behavior across nations. Based on extensions of the traditional expectancy model, we argue that employees choose whether to engage in innovative behavior by judging its feasibility and desirability (Fitzsimmons & Douglas, 2011; Krueger, 1998; Krueger & Brazeal, 1994), and that these judgments can be improved by

corporate support programs. Drawing on extant cross-cultural management research that indicates that the impact of management practices can be constrained if these practices do not match employees' cultural values (Jiang, Colakoglu, Lepak, Blasi, & Kruse, 2015; Lachman, Nedd, & Hinings, 1994), we also argue that national culture determines the strength of the relationship between corporate support programs and employees' innovative behavior.

To validate our arguments empirically, we conduct two sequential independent studies: Study 1 combines existing survey data from the Global Entrepreneurship Monitor's (GEM) 2011 special report on employees' innovative behavior (Reynolds et al., 2005) with national cultural scores for power distance, individualism, uncertainty avoidance, and masculinity (Hofstede, 1980). The combined database contains representative responses from 11,560 full-time employees from thirteen countries, enabling us to use a multi-level logit regression model to determine to what degree corporate support's impact on employees' innovative behavior depends on national culture. Study 2 sets up an experimental design with 195 participants from China and Germany to determine to what degree three types of corporate support (providing time, budget, or advice) impact employees' innovative behavior in these countries. The experimental design also allows us to investigate mediating mechanisms between corporate support programs and innovative employee behavior in China and Germany.

Our study contributes to the literature in two major ways. First, we contribute to innovation research by extending research on how individual employees can be motivated to act innovatively—especially by deepening knowledge on the relationship between corporate support and innovative employee behavior. Since direct-effect models dominate this research stream (Stock, 2015), we add a fit perspective by identifying situation-dependent drivers of individual employee behavior at the national level, increasing the precision of research models in this field. Further, we add precision to this research stream by differentiating

empirically among three types of corporate support (providing advice, providing time, and providing budget), as extant research focuses on a unidimensional perspective of corporate support (e.g., Janssen, 2005). We also examine whether employees' feasibility judgments and desirability judgments are the linking elements between corporate support programs and innovative employee behavior.

Our second contribution is to research at the interface of national culture and innovation management, which Guo (2008) describes as being in its infancy and Anderson et al. (2014) describe as lagging behind practical needs, given the international nature of today's innovation efforts. Empirical studies on employees' innovative behavior have been conducted in single countries, leading several authors to call for cross-national studies in this area (Clercq, Dimov, & Belausteguigoitia, 2014; Rank, Pace, & Frese, 2004; Stock, 2015; Wei & Morgan, 2004). The present study is among the first to examine how national cultural dimensions interact with management practices in driving employees' innovative behavior.

## **THEORETICAL BACKGROUND AND HYPOTHESES**

We derive our model starting with our dependent variable. In line with extant research (Clercq et al., 2014; Scott & Bruce, 1994; Stock, 2015; Wu, Parker, & Jong, 2014; Yuan & Woodman, 2010), we use a broad conceptualization of employees' innovative behavior that includes the generation of ideas for new products or services, their promotion, and their implementation. Innovative employees are of considerable interest since they can contribute to firm performance (Axtell, Holman, Unsworth, Wall, & Waterson, 2000; Stock, 2015).

Innovative employees engage in complex and non-trivial tasks beyond their regular tasks that require persistence and creativity (Bammens, 2016) and face barriers to their innovative behavior, including lack of time, knowledge, cooperation from other firm members (such as supervisors and experts from other departments), and energy (Anderson et al., 2014; Hornsby, Kuratko, & Zahra, 2002; Janssen, van de Vliert, & West, 2004). Therefore, clarity

about what motivates them to engage in innovative behavior is necessary in order to determine the potential of management practices like corporate support programs to increase such behavior.

Individual behavior in firms has traditionally been explained by the expectancy theory developed by Vroom (1964), which has received broad theoretical and empirical examination in the literature (van Eerde & Thierry, 1996; Wanous, Keon, & Latack, 1983). Expectancy theory suggests that individual motivation and behavior in the workplace are deliberate and are based on the individual's expectation that the behavior will cause a specific outcome and on the attractiveness of that outcome for the individual (Grant & Ashford, 2008).

The work from Krueger and colleagues indicates that an individual's engagement in uncertain activities can be parsimoniously characterized as driven by the individual's perception of the behavior's feasibility and desirability (Fitzsimmons & Douglas, 2011; Renko, Kroeck, & Bullough, 2012). While Krueger and colleagues derive these criteria in the entrepreneurial start-up context, they have been transferred to individuals in the corporate context (Clercq et al., 2014; Frese, Teng, & Wijnen, 1999). In judging a behavior's feasibility, individuals decide whether they have the required skills and abilities to implement it successfully, and in judging a behavior's desirability, they decide whether the outcome of the behavior is in line with their own objectives and social norms (Douglas, 2013; Krueger & Brazeal, 1994). Steel and König (2006) argue that, in the traditional expectancy theory terminology, feasibility aligns with expectancy and desirability aligns with valence.

Other explanations of individual behavior that are based on or inspired by expectancy theory also address feasibility and desirability. For example, Bandura's (2012) concept of self-efficacy states that individuals' propensity to act in a particular way and their expectations about the future are determined by how well they believe they can perform in a given situation (Garcia, Restubog, Bordia, Bordia, & Roxas, 2015), so Bandura's concept is at

least related to expectancy (in Vroom's terms) and feasibility (in Krueger et al.'s terms). Douglas and Shepherd (2000) develop a utility-function perspective that incorporates perceptions about anticipated income, the effort required, the risk involved, and the work environment, among other factors (Douglas & Shepherd, 2002; Monsen, Patzelt, & Saxton, 2010), and suggest that perceived utility is a function of the perception that one's abilities and effort in completing a task will be sufficient (expectancy/feasibility) and that the outcome will be of personal value (valence/desirability).

We argue that corporate support programs for innovation, such as programs that provide material and immaterial resources so employees feel that innovative initiative is enabled and encouraged, are an important lever for innovative behavior (Birdi, Leach, & Magadley, 2016; Farh, Hackett, & Liang, 2007; van Yperen & Hagedoorn, 2003). Corporate support programs can manifest in terms of providing time, budget, or advice (Birdi et al., 2016). When time is provided, an employee may work a certain part of his or her regular working time independently on innovative projects. Providing budget can include access to financing (e.g., funds to build a prototype) or manpower (e.g., capacity from other departments' experts) (Ekvall & Ryhammar, 1999). Advice refers to a supervisor or other members of the firm who provide advice and help on the economic, market-related, or technological aspects of an innovative endeavor (van Yperen & Hagedoorn, 2003). These resources can be provided to employees either automatically (such as a general rule that employees are free to invest a certain percentage of their work time to the generation, development, or implementation of innovations) or on the basis of unbureaucratic, easily accessible approval (such as may be required to assess a budget for a prototype). In what follows, we derive arguments based on this understanding of corporate support programs for how corporate support increases employees' innovative behavior by positively impacting their feasibility judgments and desirability judgments.

First, we argue that corporate support programs positively impact employees' feasibility judgments, as these programs can provide employees with time to think independently about and pursue innovative endeavors. Without such dedicated time, the daily workload can make employees believe that generating and implementing innovative ideas is not feasible (Hornsby, Kuratko, & Montagno, 1999). Corporate support frees resources the employee uses in daily business for innovation, positively impacting their judgment of the feasibility of innovative behavior (Garcia et al., 2015; Urbig & Monsen, 2012). Given that innovative endeavors are rarely "one-man-shows," corporate support also positively impacts employees' judgments of these efforts' feasibility by providing support in terms of manpower from other functions and budget for building prototypes (Ekvall & Ryhammar, 1999). Since innovative endeavors typically involve uncertain future situations and might require new knowledge, advice from supervisors can also work to increase employees' confidence in their feasibility (Jokisaari & Nurmi, 2009).

Corporate support programs also facilitate appreciation and development of employees (Farh et al., 2007), leading to their feeling valued and supported (Bammens, 2016; Wayne, Shore, & Liden, 1997). This kind of environment also fosters employees' confidence in their ability to undertake innovation (Bammens, 2016). Corporate support in the form of informal advice makes employees better informed and more likely to believe they can deal with the kind of uncertainty that is common in innovation.

Corporate support programs communicate to employees through organizational socialization that innovation is important and expected, leading to a climate of innovation that encourages employees to internalize innovation-related values (Yuan & Woodman, 2010). While employees' judgments of innovation's desirability may be negatively influenced by the threat of loss of image when an innovation fails, corporate support "legitimizes experimentation, creates psychological safety for trial and error, [...] and reduces the image of

risk involved in innovation attempts” (Yuan & Woodman, 2010, p. 327). Thus, we expect that corporate support programs positively impact feasibility judgments and desirability judgments, increasing innovative behavior:

*H1: There is a positive relationship between corporate support programs and employees’ innovative behavior.*

### **The moderating impact of national culture**

Based on fit theory, we argue that corporate support is more effective in driving employees’ innovative behavior when the support is compatible with the employees’ preferences. Kristof (1996) refers to this perspective as the “needs supplies” perspective of the fit theory. Cable and Edwards (2004) find that, when employees’ desires and needs are fulfilled, there is less conflict and employees are more likely to act in ways that management practices are designed to encourage them to act (Eisend, Evanschitzky, & Gilliland, 2015; Markman & Baron, 2003). This notion is in line with Klein and Sorra’s (1996) argument that employees’ adoption of innovative work methods (as concrete corporate support mechanisms can be innovative) will occur only when these methods are in line with employees’ values (“innovation-value-fit”) (Klein, Conn, & Sorra, 2001). In terms of our purposes, Gollwitzer (1996) argues that judgments on feasibility and desirability (i.e., the criteria we employ for engaging in innovative behavior) are not fixed but depend on employees’ values.

While these arguments call for a fit rationale, we specify employees’ values as those related to their national cultural predetermination. National culture refers to enduring personal values that are typically shaped by the time of adolescence (Hofstede, 2001; Ralston, Holt, Terpstra, & Yu Kai-Cheng, 1997; Smircich, 1983). National culture and its values determine employees’ interpretation of, understanding of, and behavioral reaction to the work environment, including management practices like corporate support programs. Thus, national



culture either facilitates or obstructs corporate support's impact on employees' innovative behavior (Lachman et al., 1994).

Researchers have developed several national cultural dimensions that refer to the issues with which all cultures are confronted, but with which they deal differently (Lytle, Brett, Barsness, Tinsley, & Janssens, 1995). We build on the initial four cultural dimensions Hofstede (2001) proposes (power distance, individualism, uncertainty avoidance, and masculinity), as we prefer Hofstede's dimensions over alternative schemes of dimensions. A major reason for this choice is that Hofstede's major area of application is management, and work-related values are the foundation of his work. In addition, major conceptual studies relate Hofstede's dimensions to innovation topics (Nakata & Sivakumar, 1996; Rank et al., 2004), and a plethora of existing empirical research indicates that Hofstede's dimensions can explain cross-national differences in issues related to innovation (Hohenberg & Homburg, 2016; Mueller & Thomas, 2001; Sarooghi, Libaers, & Burkemper, 2015; Thomas & Mueller, 2000). Further, as more practical reasons, the four dimensions cover a broad set of work-related activities but are also parsimonious (Kirkman, Lowe, & Gibson, 2006), recent updates of country scores are available, and practitioners are often well acquainted with these dimensions (Schaffer & Riordan, 2003; Taras, Steel, & Kirkman, 2012).

We refrain from using Hofstede's fifth dimension, long-term orientation, which the author added later, as it originates in a non-work context, captures Confucius' teachings in both poles of the dimension's continuum, and could not be replicated in the Western context (Hofstede and Bond, 1988). Further, recent contributions question whether the dimension's measurement models capture what is suggested by "long-term orientation" (Bearden, Money, & Nevins, 2006; Venaik, Zhu, & Brewer, 2013), and recent country scores are not available for this dimension (Beugelsdijk, Maseland, & van Hoorn, 2015; Taras et al., 2012).

Power distance refers to the degree to which people accept that power is distributed unequally (Hofstede, 2001). National cultures that have high levels of power distance tend to have a strong focus on authority, rules, and status in society (Shane, 1992). The rank-and-file assumes that authority figures are superior to their subordinates, so employees resist taking responsibility, preferring to wait for instructions. In contrast, cultures with a low level of power distance stress egalitarianism, independence, initiative, and equal sharing of power between managerial and non-managerial employees (De Luque & Sommer, 2000).

As for the effect of power distance on corporate support programs, these programs provide time and/or other resources to increase employees' perception of innovative behavior's feasibility. Since employees in cultures with high levels of power distance are likely to feel uncomfortable with ambiguous, responsibility-laden situations outside the boundaries of their established job descriptions (Jiang et al., 2015; Kirkman, Chen, Farh, Chen, & Lowe, 2009; Kirkman & Shapiro, 1997), they tend to resist situations in which self-management is necessary, as is likely to be the case when they are granted resources like time and budget for broadly defined projects like innovation (Kirkman & Shapiro, 2001). Employees in cultures with high levels of power distance also appreciate close, detailed guidance from supervisors, which is unlikely to happen when time or other resources are granted so an individual can work independently on an innovative idea (Hofstede, 2001). The allocation of manpower may also cause discomfort, especially when the other employees are hierarchically at the same level or higher. Employees in these cultures might even ignore corporate support programs, disqualifying them as ways to improve judgments about feasibility, as the management practice clashes with their cultural preferences (Jiang et al., 2015). On the other hand, in cultures with low levels of power distance, corporate support programs and the resources they provide are in line with the cultural appreciation of

autonomy and self-initiative, the preference for working independently with minimal instruction, and the desire to act outside established authority (Hofstede, 2001).

As to desirability, employees in cultures with high levels of power distance prefer acting under the close and stable guidance of supervisors, which makes it unlikely that corporate support programs will increase their internalization of the value of innovation or that desirability judgments will be positively impacted (Brettel, Engelen, Heinemann, & Vadhanasindhu, 2008). However, in cultures with low levels of power distance, employees are much freer to developing their own approaches to work and are more willing to let go of the limits implied in organizational positions (Carl, Gupta, & Javidan, 2004).

Clearly, corporate support programs fit the preferences in cultures with low levels of power distance better (i.e., higher “innovation-value-fit” in Klein et al.’s terms) than they do those in cultures with high levels of power distance. Therefore, we expect that corporate support translates more strongly into innovative behavior in low power distance cultures.

*H2: The positive relationship between corporate support programs and employees’ innovative behavior is stronger when national cultural power distance is low rather than high.*

Individualism refers to the degree to which people take care primarily of themselves (Hofstede, 2001). Individualist cultures stress self-sufficiency, independence, non-conformity, and the pursuit of personal goals (Ramamoorthy & Carroll, 1998; Shane, 1992). On the other end of the continuum, collectivism refers to the subordination of personal interests to those of a larger group. Collectivist cultures tend to stress group harmony, stability, and loyalty (Morris, Davis, & Allene, 1994).

Corporate support programs require substantial initiative from employees who want to use them to develop innovative ideas. Initiative is deeply rooted in individualist cultures

(Triandis, 1994), and changing priorities and team members is more readily accepted in these cultures, where employees tend to work independently and to be loosely integrated into their work teams and departments (Ramamoorthy & Carroll, 1998). In collectivist cultures, group stability, loyalty, and harmony are valued, so the allocation of resources like time and manpower from outside the group can destabilize these orderly situations. Such corporate support programs can put employees in undesirable situations that extricate them from the established group connections that are the backbone of the collectivistic culture (Autio, Pathak, & Wennberg, 2013).

We argue that the effect of corporate support on intrinsic motivation is weaker in collectivist cultures than it is in individualist cultures, since those in collectivist cultures are less likely to be internally motivated than they are by the group's well-being and since they avoid standing out for their individual accomplishments (Triandis, 1994). It follows that the feasibility-enhancing character of corporate support can unfold more strongly in individualist cultures, while there are culturally rooted barriers to its doing so in collectivist cultures.

In terms of desirability judgments, we argue that corporate support is more likely to internalize innovation-related values in employees in individualist cultures. Innovation and breaking with the status quo are rooted in individualist cultures (Efrat, 2014), so corporate support programs for innovation address this type of culture's core values, strengthening corporate support's impact. However, those in collectivist cultures are likely to prefer stability, limits on individual freedom, and the status quo, so a corporate support program and the internalization of innovation-related values it seeks does not fit with the prevailing cultural preferences (Nam, Parboteeah, Cullen, & Johnson, 2014).

*H3: The positive relationship between corporate support programs and employees' innovative behavior is stronger when national cultural individualism is high than when it is low.*

Uncertainty avoidance refers to the degree to which individuals are threatened by uncertain situations (Hofstede, 1980). In high uncertainty-avoidant cultures, individuals expect structure, rules, and policies and try to avoid ambiguous situations. However, in low uncertainty-avoidant contexts, individuals tend to accept change and risk and to regard uncertain situations as opportunities, rather than threats (De Luque & Javidan, 2004).

As for feasibility judgments, employees in high uncertainty-avoidant cultures tend to dislike deviations from the status quo and unstructured situations with unclear outcomes (Autio et al., 2013; Shane, 1994), so these employees will not use either these corporate programs or the benefits they provide to their full extent. Unusual resources and unusual freedom in using them, especially when outcomes are uncertain, are considered a burden, so they are unlikely to increase employees' perceptions of innovative endeavors' feasibility (Shane, 1994). On the other hand, employees in low uncertainty-avoidant cultures tend to see the opportunities in new situations and to appreciate the resources provided, even when there are no guidelines on how use them to innovate, so their judgments of the feasibility of innovative behavior are likely to be positive (Luque & Javidan, 2004; Shane & Kolvereid, 1995).

Individuals in low uncertainty-avoidant cultures are likely to judge the desirability of innovation positively, as they are often open to adapting to new conditions and giving up established convictions (Brettel et al., 2008). Therefore, a corporate support program is likely to lead employees to internalize innovation-related values. In highly uncertainty-avoidant cultures, however, established convictions and working modes are difficult to change, so such corporate support programs are more likely to stagnate. In addition, innovation-related values and convictions are generally more widespread in low uncertainty-avoidant cultures (Autio et al., 2013; Nam et al., 2014), so a corporate support program is likely to match the preferences

of employees in these cultures, facilitating the process of internalizing innovation-related values in employees. In high uncertainty-avoidant cultures, the fear of failure is deeply rooted, so such corporate support programs are likely to meet with cultural barriers, inhibiting their ability to impact employees' positive perceptions of innovative behavior's desirability.

Overall:

*H4: The positive relationship between corporate support programs and employees' innovative behavior is stronger when national cultural uncertainty avoidance is low than when it is high.*

Masculinity manifests in a culture's preference for individual monetary achievement, strong ambitions, wealth, and successful career. Personal objectives and the individual's standing out as a result of performance, even if such is achieved by elbowing others out, are admired (Doney, Cannon, & Mullen, 1998; Nakata & Sivakumar, 2001). Individuals prefer challenges and admire heroic behaviors accomplished independently without support from others. Feminine cultures attach importance to warm, "give-and-take" personal relationships that are characterized by trust and mutual support (Chang, 2006; Hofstede, 1984; Nakata & Sivakumar, 1996). Cooperation among members of an organization is appreciated and dependency on others is accepted.

In feminine cultures, socio-emotional support from superiors is a major need for employees, which corporate support programs (advice in particular) can provide. Corporate support programs also create an atmosphere of mutual help, which is particularly valued in feminine cultures (Nakata & Sivakumar, 1996; Nakata & Sivakumar, 2001). Dependency on others (e.g., on superiors providing budgets) is accepted in these cultures (Chang, 2006). Employees in masculine societies could be irritated by this kind of offer. In masculine societies, the strong individual who takes on challenges and makes the most out of a modest situation is the admired employee. Corporate support programs that are available to many or

all employees can take away the possibility of heroically standing out against other employees, so these programs are less necessary or even ignored by employees in masculine cultures (Hofstede, 1984). Further, individuals in masculine societies attach great importance to being independent from others in their accomplishments (Chang, 2006) which runs counter a situation in which budgets or other types of corporate support are granted. It follows that the corporate support enhances feasibility judgments more strongly in feminine cultures.

As for desirability judgments, we reason that corporate support is more likely to internalize innovation-oriented values in feminine cultures than it is in masculine cultures. In feminine cultures, innovation is a way to create the future and improve the well-being of an entire society, which is a major value in feminine cultures (Nakata & Sivakumar, 1996). In masculine cultures, the constant seek for new challenges may distract from innovation efforts which can be lengthy and require patience. In this vein, van Everdingen and Waarts (2003) and Waarts and van Everdingen (2005) empirically find that the adoption of innovation is lower in masculine compared to feminine cultures. It follows that the desirability-strengthening effect of corporate support is inhibited in masculine cultures. Therefore:

*H5: The positive relationship between corporate support programs and employees' innovative behavior is stronger when national cultural masculinity is low than when it is high.*

Our research model is shown in Figure 1.

*Insert Figure 1 about here.*

## **OVERVIEW OF STUDIES**

Here we describe the two empirical studies that together validate our research model empirically. The first study leverages the worldwide GEM team's existing survey data on 11,560 full-time employees from thirteen countries to apply to a multi-level logit regression model (Schaffer & Riordan, 2003; Tsui, Nifadkar, & Ou, 2007). In addition to testing our core

relationship between corporate support and innovative employee behavior, this broad set of countries allows us to analyze the impact of each of the four cultural dimensions individually. Study 2, an experimental study design based on data from China and Germany, deepens insights from study 1 by analyzing whether three types of corporate support function differently and whether feasibility judgments and desirability judgments mediate the core relationship between corporate support programs and employees' innovative behavior.

## **STUDY 1**

### **Methodology**

#### *Sample*

We use several independent and largely publicly accessible data sources to build a multi-level model in which individual employees are nested within nations. The individual employee level data are based on the 2011 Global Entrepreneurship Monitor (GEM), which covered a special report on innovative and entrepreneurial employee behavior (Bosma et al., 2013), focusing on the role and characteristics of employees in various nations (Reynolds et al., 2005). The GEM project used local researchers in many nations and assured that participants were selected randomly from the working-age population to guarantee representativeness. GEM policy is that clearly defined callbacks be done before a researcher gives up on a respondent (Bosma, Coduras, Litovsky, & Seaman, 2012). Local researchers must note for each respondent several information (e.g., age, education, household size) so checks are possible. Data are checked for anomalies over the years. While the respondent selection procedure is defined for all nations, the interviewing procedure (either face-to-face or telephone interviews) can differ in each country. However, this approach is common and accepted in cross-cultural management research (van Vijver & Leung, 1997).



The GEM coordinators provide an English and Spanish version of the standardized questionnaire, but translations to other local languages are made by the local researchers, who must ensure back-translation to English or Spanish by an independent third party. More details are provided in the GEM manual (Bosma et al., 2012). The survey respondents for the special report in 2011 represent a wide range of employees with regard to individual characteristics (e.g., age, gender, education, income) (Table 1).

*Insert Table 1 about here.*

We combined the GEM data with Taras et al.'s (2012) national culture meta-analysis scores on Hofstede's dimensions, resulting in complete datasets (all controls and variables featured in our research model) of 11,560 responses from a broad set of thirteen culturally and economically different nations (Australia, China, Germany, Greece, Hungary, Korea, Malaysia, the Netherlands, Poland, Romania, Thailand, Turkey, the UK). Table 2 shows the nation scores on the relevant cultural dimensions. We used data from the Global Competitiveness Report 2012/13 for the GDP-per-capita measure.

*Insert Table 2 about here.*

### *Measures*

*Employees' innovative behavior:* The measure for employees' innovative behavior is based on the 2011 GEM special report and defined as a binary variable, where 1 indicates that the surveyed employee is currently or has been within the previous three years actively involved in developing new activities for his or her main employer, and zero otherwise (Bosma et al., 2013). New activities are defined in the questionnaire as activities related to the initiation of new products or services. Single-item dichotomous scales are almost exclusively used in GEM projects since these scales have minimal bias that can be due to cultural

interpretations (Autio et al., 2013). In addition, dichotomous scales have few problems with translation equivalence (Hofstede, Wedel, & Steenkamp, 2002).

*Corporate support:* Based on the 2011 GEM special report, corporate support for innovation is defined as a binary variable, where 1 indicates that the employee's current employer is willing to provide support when employees come up with ideas for new products or services, and zero otherwise (Bosma et al., 2013).

*National culture:* We analyze national culture in terms of the four national cultural dimensions of power distance, individualism, uncertainty avoidance, and masculinity (Minkov & Hofstede, 2012). We use the meta-analysis scores from Taras et al. (2012), who built a database of 451 studies that report their participants' cultural values using measures like those Hofstede employs. Since there were differences in scales (e.g., 1-5, or 1-7), they transformed all scores to a 0-1 range and then standardized them within data subsets so that scores do not usually exceed the extremes of  $-2$  and  $2$ . Zero, which signifies a country's neutral position on a dimension, corresponds approximately to a 50 on the original scores Hofstede provides. Taras et al. (2012) create three scores for each dimension, one for each decade (1980s, 1990s, 2000s). We use the scores from 2000s as the most recent country classifications.

*Control variables:* We control for several factors, including age (Grimm & Smith, 1991), gender (Shane, Locke, & Collins, 2003), whether the respondent completed post-secondary education (Camelo-Ordaz, Fernández-Alles, Ruiz-Navarro, & Sousa-Ginel, 2012), income relative to GEM population (Autio et al., 2013), whether the respondent expected to start a business alone or with others within the next three years (Campbell, Ganco, Franco, & Agarwal, 2012), and whether the respondent perceived that he or she had the necessary skills to start a business—all of which data come from the GEM database. We also control for GDP

per capita, obtained from the Global Competitiveness Report 2012/13. The respondent's age and GDP per capita were also introduced as squared terms.

## Results

Table 3 provides the descriptive statistics and correlations. Because of low correlations between the independent variables and the low (<10) Variance Inflation Factors (VIFs), we expect no issues with multicollinearity (Aiken, West, & Reno, 1991; Wooldridge, 2012).

*Insert Table 3 about here.*

We analyze our data, structured as a hierarchical dataset grouped by country, using a multilevel research design in which individual employees (level 1) are nested within countries (level 2). Since the dependent variable has a dummy outcome, we estimate a logit model. We use a multilevel mixed-effects approach to model binary dependent variables in which the log odds of the outcome variables are modeled as linear combinations of the independent variables (Agresti, 2013). We ran several model-fit tests: the  $\chi^2$  test, which confirms a low and highly significant p-value (Rabe-Hesketh & Skrondal, 2008); Akaike's information criterion (AIC), which indicates an improvement in model fit when the main effect and the national culture variables are added (Akaike, 1998); the likelihood ratio test vs. the logistic regression, which confirms our finding that a multilevel study design is most appropriate for our data (Menard, 2002); and a pairwise likelihood ratio test to compare the interaction models with the nested model 3, which suggests that the introduction of the national culture moderators offers a partial improvement in model fit.

Table 4 shows the results of the log odds regression. Odds ratios, shown in Table 5 to provide the size of the effects, indicate the change in the strength of the dependent variable (i.e., employees' innovative behavior) that results from a change in the independent variable. An odds ratio of 1.00 indicates no effect between the dependent variable and the independent

variable, while odds ratios of less than 1.00 indicate negative relationships between the dependent and independent variable, and those of more than 1.00 indicate positive a positive relationship—that is, an increase in corporate support increases the likelihood of employees' innovative behavior (Hillman, Shropshire, & Cannella, 2007). Table 4 reports the pseudo R-square values based on the formula from McFadden and the formula from McKelvey and Zavoina (Hoetker, 2007; Veall & Zimmermann, 1996). Multilevel approaches are suggested when Intra-Class Correlations show significant national differences at the individual level. Such is the case in our data, which shows a between-country variance of 16 percent, supporting the use of multilevel approaches rather than OLS regressions.

*Insert Table 4 and Table 5 about here.*

Model 1, which examines individual- and country-level control variables, shows that the individual-level control variables have a significant effect on employees' innovative behavior, while GDP per capita does not. Model 2 adds the main effect for corporate support programs. The regression coefficient ( $\beta=1.630$ ;  $p<.001$ ) indicates that corporate support programs increase innovative behavior, and the odds ratios indicate that an increase of one standard deviation in corporate support programs increases employees' innovative behavior by 410 percent (odds ratio=5.1). Applying the STATA commands as Wiersema and Bowen (2009) propose shows that all marginal effects are positive, ranging from .02 to .42, with highly significant z-values. A summary measure computes the marginal effect at the means of all other variables as .24 (with a high z-value of 26.42) for the direct effect. Overall, these findings lend support to H1.

Model 3 adds the country scores, and models 4, 5, 6, and 7 add the interaction terms. Model 4 shows that there is a negative relationship between the interaction term for corporate support programs and power distance and the dependent variable ( $\beta=-.265$ ,  $p<.05$ ). An odds ratio of .767 at  $p<.05$  indicates that an increase of one standard deviation in a country's power

distance decreases the effect of corporate support on innovative work behavior by 23.3 percent. Plotting the marginal effects of the interaction term on innovative work behavior over all values of the independent variable gave marginal values ranging from -1.09 to -.30, with significant z-values from -2.86 to -24.39 (Figure 2a). The summary measure is -.083, with a z-value of -8.26, lending support to H2.

*Insert Figure 2 about here.*

Model 5 indicates a positive moderating effect of individualism on the relationship between corporate support and innovative work behavior ( $\beta=.253$ ,  $p<.1$ ). The odds ratio shows that an increase of one standard deviation in a country's individualism increases the likelihood that corporate support programs translate into innovative work behavior by 28.8 percent (odds ratio= 1.288,  $p<.1$ ). All marginal effects are positive, with values ranging from .03 to .11 and significant z-values ranging from 3.26 to 19.83 (Figure 2b). The summary value is .08, with a z-value of 7.08. Therefore, H3 is supported.

Interpretation of the moderating effect of uncertainty avoidance is less straightforward. While there is a significant negative regression coefficient ( $\beta=-.321$ ,  $p<.05$ ), the marginal effects analysis indicates that this effect is not present for all values of the independent variable; there are values with positive and negative signs, ranging from -.11 to .01 (Figure 2c). High values have insignificant z-values, which leads to the rejection of H4.

Model 7 finds a negative impact of masculinity on the relationship between corporate support and innovative work behavior ( $\beta=-.393$ ,  $p<.01$ ). The odds ratio shows that an increase of one standard deviation in a country's masculinity decreases the likelihood that corporate support programs transform into innovative work behavior by 32.5 percent (odds ratio= 0.675,  $p<.01$ ). We obtained marginal values ranging from -.16 to -.01, with significant z-values from -8.54 to -1.77 (Figure 2d). The summary measure is -.10, with a z-value of -5.66, lending support to H5.

### *Robustness analyses*

We performed a subsample sensitivity analysis that yielded consistent results. Germany accounts for 17 percent of the sample size and is the largest single country in the dataset, but removing Germany from the regression does not change significance levels or the directions of the coefficients. We checked for outliers in the control variables and found a low prevalence of the variable “expectation of starting a new business within the next three years” in the UK. Removing the UK from our data set does not change the coefficients’ directions. The significance levels of the moderation effects remain stable or increase from 10% to 5% (moderation of individualism) or decrease from 5% to 10% (moderation of masculinity).

We also conducted a fuzzy-set qualitative comparative analysis (fsQCA). This approach combines the complexity of a case study approach with the generalizability that is typically obtained by formal analysis (Fiss, 2011). QCA enables the researcher to find patterns between set membership (e.g., firms that belong to nations with strong individualism) and outcomes (e.g., innovative and non-innovative employees), and the fuzzy set approach increases the precision of these membership sets by capturing various degrees of membership (e.g., firms that belong to nations with a moderate degree of individualism). fsQCA allows the characteristics of groups built according to the outcome (e.g., the group of highly innovative employees) to be derived. We acknowledge that our large sample size prohibits our reaping fsQCA’s full benefits, so we cannot qualitatively classifying each of our datasets. There is a group of employees with “highly innovative behavior” in our data that is characterized by a configuration of strong corporate support, individualism, absence of power distance, absence of uncertainty avoidance, and absence of masculinity. This path has a raw coverage of .47, a high consistency of .91, and a unique coverage of .32, all of which are above the commonly proposed thresholds for relevant paths in fsQCA (Vis, 2012). These findings largely confirm

the results of our regression analysis and indicate that the simultaneous presence (or absence) of the cultural dimensions has a strong impact on how corporate support programs work.

## **STUDY 2**

### **Methodology**

#### *Objective and research design*

To shed light on how different kinds of corporate support work and whether feasibility judgments and desirability judgments mediate the relationship, we conducted an experimental study with the independent variable of corporate support programs, differentiating among four scenarios of corporate support (no support, providing time, providing budget, and providing advice; Birdi et al., (2016)) and with feasibility judgments and desirability judgments as mediators. A scenario-based experimental study is appropriate for this purpose for two reasons: First, the extant literature (Clercq et al., 2014; Kuratko et al., 2011) and our own pre-test interviews indicate that firms may provide some corporate support programs, but concrete support options like providing time might be used more rarely. Therefore, a general survey of firm might lead to less variance in answers. This is why we employ an experimental design to capture respondents' views on scenarios where a manipulation occurs to corporate support programs. Second, experimental data are more appropriate for depicting the causal relationships implied in mediation models (Jiao & Zhao, 2014).

We conducted the experimental study in China as a representative of the Asian culture type, and Germany, as a representative of the Western culture type (Hofstede, 2001). Both are major economic powerhouses, so findings are of interest to practitioners. While China and Germany score similarly on the dimensions of uncertainty avoidance and masculinity, Germany is more individualistic and less power distant than China (Taras et al., 2012). These cultural properties suggest (according to study 1's findings) that the impact of corporate

support programs should unfold well in Germany but not in China. Therefore, these country settings allow us to test the mediation of and the four types of corporate support in two relevant and contrasting cultural settings (Hofstede, 2001; Taras et al., 2012).

### *Experimental design*

Using a web-based tool, we asked the participants to imagine themselves as employees in a firm that operates in a turbulent environment. The participants were asked to imagine that they have thought of a product innovation and are considering advocating for it internally. Each participant received information on how the firm supports employees' innovative behavior, differentiating among the four scenarios described above such that each participant received a single scenario randomly. We asked the participants to respond to multi-item measurement models that were related to the imaginary situation concerning employees' innovative behavior (from Stock, 2015) and feasibility judgments and desirability judgments (adapted from Krueger, 1993). Appendix A provides the fictional situation and the manipulations.

### *Sampling*

We contacted employees in a variety of industries in China and Germany by means of online networking platforms (Homburg, Klarmann, & Staritz, 2012). Our target group in both countries was employees who were not older than age forty and who had fewer than fifteen years of work experience at non-managerial levels. In China we targeted more developed coastal regions to reduce the gap in terms of economic development in relation to Germany. Our final sample consisted of 94 participants in China and 101 participants in Germany.

### *Measures*

To measure employees' innovative behavior, we employed the items Stock (2015) proposes, based on Janssen (2000). Psychometric properties were good ( $CR = .87$ ,  $AVE = .57$  in



Germany; CR = .86, AVE = .57 in China). Both CRs and AVEs were estimated based on standardized indicator and latent variable estimates reported in the PLS output. We applied the formula from Werts et al. (1974) to compute CRs, and the formula provided by Fornell and Larcker (1981) to compute AVEs. To measure feasibility judgments and desirability judgments, we adapted the items from Krueger (1993) to our setting. Again, psychometric properties were good (Feasibility: CR = .77, AVE = .49 in Germany; CR = .77, AVE = .48 in China; Desirability: CR = .79, AVE = .52 in Germany; CR = .79, AVE = .56 in China). The same applies to our measure of proactive personality, which we introduce as control in our regression to accommodate extant research which has found that innovative activity at the workplace is also determined by personal characteristics (Miron, Erez, & Naveh, 2004), drawing on items from Bateman and Crant (1993) (CR = .95, AVE = .83 in Germany; CR = .78, AVE = .57 in China). We also controlled for hierarchical level in the firm (measured by the number of levels below top management), whether the firm operates in a production or service industry, and the age of the respondent (in years). Items are shown in Appendix B.

## **Results**

### *Realism checks*

We checked the realism of the situation using two items Homburg et al. (2012) proposes. Psychometric properties were satisfactory for the items “I could imagine my actual employer doing the things described in the situation earlier” and “I believe that the described situation could happen in real life” (CR = .87, AVE = .74 in Germany; CR = .79, AVE = .66 in China), and participants considered the situation to be realistic ( $M_{\text{realism}} = 4.81$ ,  $SD_{\text{realism}} = 1.77$  in Germany;  $M_{\text{realism}} = 4.76$ ,  $SD_{\text{realism}} = .076$  in China) (Homburg et al., 2012).

### *Hypotheses testing*

The descriptives for the samples from both Germany and China are shown in Table 6.

Distributions of respondents' hierarchical levels in their firms are similar in Germany and China. Means on the proactive personality measure also do not differ significantly from each other.

*Insert Table 6 about here.*

We applied a structural equation modeling approach with partial least squares (PLS) to estimate our models. PLS allows two-step models to be estimated and can deal with our comparatively small sample sizes (Chin, 1998; Muller, Judd, & Yzerbyt, 2005). We estimated regression models for the three types of corporate support for each country, comparing the prevalence of each type of support with the scenario of "no support." While we chose tightly defined, comparable samples in both countries, the variables that impact our core relationships are still likely to vary. Therefore, we added controls for hierarchy level, age of respondent, proactive personality, and industry (manufacturing vs. service). In each case, we first estimated the regression without the mediators of feasibility judgments and desirability and then added them (Table 7).

Findings for Germany indicate that all three types of corporate support significantly and positively impact feasibility judgments (.551,  $p < .01$ ; .639,  $p < .01$ ; .384,  $p < .01$ , respectively), but only providing a budget also facilitates desirability (.393,  $p < .05$ ). Positive feasibility judgments and desirability judgments drive innovative employee behavior consistently (with coefficients from .182,  $p < .1$  to .337,  $p < .01$ ). We conducted Sobel tests to validate the mediating impact, and for all three types of support, feasibility judgments mediate the relationship between corporate support and innovative employee behavior (significant  $z$ -values from .174 to 1.96). Desirability judgments mediate between support and innovative employee behavior only for providing time and providing budget ( $z = 1.67$  for time and  $z = 2.05$  for budget), not for providing advice. From these findings in the data from Germany, we

conclude that—via feasibility judgments and sometimes desirability judgments—all three types of corporate support foster innovative employee behavior, but feasibility judgments appear to be the more important path.

*Insert Table 7 about here.*

In the sample from China, none of the three types of corporate support positively impacts feasibility judgments or desirability judgments. Desirability drives innovative employee behavior (with coefficients from .612,  $p < .01$  to .829,  $p < .01$ ) more strongly than feasibility judgments (with coefficients from .144, n.s. to .361,  $p < .01$ ) do, so in China employees engage in innovative employee behavior when innovation is generally considered desirable in the firm, but these judgments are not driven by corporate support programs. Further, none of the Sobel tests provide significant values, so the sample from China does not reveal mediation effects of feasibility judgment and desirability judgment.

As for our hypotheses, we learn that the impact of corporate support programs on innovative behavior, as stated in H1, exist only in the German context, but in this context all three types of corporate support are effective, especially in terms of facilitating feasibility judgments of innovative behavior. Therefore, H1 is confirmed in the sample from Germany, but not in that from China.<sup>1, 2</sup> The two country settings do not allow H2, H3, H4, and H5 to be analyzed individually. Since Germany differs from China in power distance (lower in Germany) and individualism (stronger in Germany), while being similar in masculinity, these findings from study 2 are generally in line with the findings from study 1, which indicated

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<sup>1</sup> As a robustness check, we estimated the regression models in study 1 individually for the GEM data from Germany and China. In line with study 2, we find a significant and positive impact of corporate support on innovative employee behavior in the data from Germany (1.686,  $p < .001$ ) but not in the data from China (.333, n.s.).

<sup>2</sup> As an additional robustness check, we ran the regression analyses for the German sample excluding those respondents which considered the provided scenario as unrealistic (1 and 2 on the relevant Likert scales) to accommodate the larger variance on these items in Germany compared to China. Regression coefficients remain the same in terms of significances and directions with the exception of the relationship between corporate support (time provision) and desirability which turns non-significant.

that corporate support has a stronger impact when power distance is low and individualism is high. Study 2 deepens study 1's insights by showing that, when cultural properties are unfavorable (as they are in China), corporate support programs do not translate into increased innovative employee behavior because they do not positively impact employees' feasibility judgments and/or desirability judgments of innovative behavior.

## **DISCUSSION**

The present research uses two independent studies to develop theoretically and validate empirically that corporate support programs can enhance employees' innovative behavior. Our findings indicate consistently across the two studies that the relationship between corporate support programs and individual employee behavior is not universal but is determined by national culture.

In the Western context, we consistently find that there is a positive relationship between corporate support programs and innovative employee behavior, mediated by feasibility judgments and desirability judgments. Based on a sample from Germany, we find in study 2 that three types of corporate support programs impact these judgments positively, affecting innovative employee behavior. Providing a budget stands out against the other two types of corporate support by impacting both feasibility judgments and desirability judgments. The general positive impact of corporate support programs is in line with extant research, which has shown empirically, using primarily Western samples, that various forms of corporate support drive innovative employee behavior (Birdi et al., 2016; Janssen, 2005). These findings are also in line with traditional expectancy theory arguments that feasibility judgments and desirability judgments determine individual behavior. However, we do not find such relationships in the context of China. The three types of corporate support we examine neither increase feasibility judgments and desirability judgments nor increase innovative employee behavior directly.

We also find that national cultural properties determine the relationship between corporate support programs and innovative employee behavior. As it is in line with fit theory, this finding from study 1 confirms the notion that facilitating innovative employee behavior is a complex task and that national cultural dimensions can influence the ability of management levers—in our case, corporate support programs—to drive innovative behavior. This finding is also in line with the broader cross-cultural management literature, which has found similar complex cultural dependencies for other management levers that determine employees' immediate work environments (Engelen, Schmidt, Strenger, & Brettel, 2014; Hohenberg & Homburg, 2016). We find that three cultural dimensions from Hofstede—power distance, individualism, and masculinity—are relevant moderators of the relationship between support programs and innovative behavior. However, our theoretical expectations regarding uncertainty avoidance are not confirmed empirically. It is possible that employees in high uncertainty-avoidant cultures do not consider corporate support as implying as a strong burden as we expected.

## **IMPLICATIONS AND FUTURE RESEARCH**

### **Theoretical and Research-related Implications**

Our theoretical model and the empirical findings from both studies have four primary theoretical and research-related implications. First, we present feasibility judgments and desirability judgments based on expectancy theory as mechanisms that translate corporate support programs into innovative employee behavior. Our experimental study 2 confirms this notion, especially for feasibility judgments, at least in the sample from Germany, thereby providing a rationale for why the extant empirical research has often found positive relationships between corporate support and innovative employee behavior or related constructs. We also show that, while all three types of corporate support we analyzed drive feasibility judgments, providing a budget also impacts desirability judgments positively.

Perhaps granting substantive monetary resources is a more credible measure from top management than providing less substantive advice or time. Our findings indicate that this tangible commitment indicates to employees that innovation is really at the top of the agenda.

Second, we add a fit theory perspective to the research area of individual innovative behavior. As the overview on empirical studies from Stock (2015) indicates, direct-effect models dominate, and few moderating variables have been examined. Our findings indicate that antecedents' ability to affect employees' innovative behavior is by no means universal but can vary substantially across environments. The rationale of the fit theory is that employees' needs and expectations of their firms and their firms' management practices differ based on the employees' preferences and values. We conclude that facilitating employees' innovative behavior requires a deep understanding of how employees' needs and preferences are rooted in their national cultures before recommendations for implementing particular drivers of innovative behavior can be made.

Third, our research also contributes theoretically and empirically to research at the interface of national culture and innovation. Anderson et al. (2014) highlight the need for academic work on the international aspects of innovation, as "theorizing and research in this regard have lagged behind practical needs" (p. 1301). Eisend et al. (2015) emphasize that national cultural characteristics are particularly under-researched in this area. Hayton et al. (2002) lament the absence of large-scale empirical cross-national studies. In addressing this gap, our research derives theoretically and validates empirically that employees' innovative behavior is determined by the interplay of corporate support programs and national culture. The overview from Stock (2015) indicates that most empirical research on employees' innovative behavior has been conducted in the US, with a few in the Asian context. To the best of our knowledge, our research is the first to compare relationships across nations, and it

contributes to extant research by showing that findings in these one-country studies must always be interpreted in light of the national context.

Fourth, our study contributes to innovation research in general and to research on employees' innovative behavior in particular by building and validating (in study 1) a multi-level model. As Anderson et al. (2014) and Autio et al. (2013) observe, multi-level models are rarely used in innovation management and related areas. By integrating firm- and nation-level variables into our study, we respond to Hitt et al.'s (2007) call to build models with variables on more than one level in order to accommodate the complexity of individual behavior in firms. The latter is likely to apply particularly to employees' innovative behavior, given the complexity of this type of behavior and the many barriers to the behavior reported in the literature. The multi-level perspective allows us to detect the interplay between drivers at the national level and those at the firm level in predicting employees' innovative behavior.

### **Managerial Implications**

Managers who operate internationally are always confronted with the question concerning whether a particular management technique should be standardized worldwide or should be adapted to the local environment. Worldwide standardization is desirable (e.g., in terms of synergies and simplicity) and is often possible, especially in terms of production techniques like the Toyota Management Program (Spear, 2004). However, our research indicates that similar worldwide standardization of corporate support programs for innovation does not lead to the desired outcomes across the globe. Instead, the impact of these programs on innovative employee behavior unfolds most strongly in national cultural contexts with low levels of power distance, high levels of individualism, and low masculinity, characteristics that apply primarily to Western nations (e.g., Germany). When power distance, collectivism, masculinity are strong, corporate support programs might lead to confusion and discomfort, rather than to innovative behavior.

When a national cultural background like that in Germany provides good conditions for corporate support of innovative behavior, study 2 informs managers that all three kinds of corporate support—providing time, budget, and advice—are effective in driving employees' innovative behavior, but since providing budget has the strongest impact, resources should be allocation to this type of corporate support first. One way to provide budget is to install a committee to which employees can apply for budgets for building prototypes, market research, or other investments necessary to developing an innovative idea. Packard (2006) describes two interesting levers which provide some sort of budget to innovative action at Hewlett-Packard: They used to assign a yearly, clearly defined budget to innovation efforts across the company, calculated as a share of its sales volume (typically around 10%), regardless of other circumstances. Further, Hewlett-Packard allowed free access to electric parts and components to its engineers giving them the opportunity to work and test things, even when they used it for private purposes.

As for providing time, managers could provide a certain amount of work time to be dedicated to innovation-related activities, reducing other duties accordingly, like Google does. To take an example, IBM introduced the so called “Emerging Business Opportunity”-program in which selected ideas are implemented even full-time by a dedicated team, the most extreme form of time provision to a single employee (O'Reilly, Harreld, & Tushman, 2009).

Firms that want to pursue advice provision should train their managers at all levels that employees are a source of innovation but that there are many barriers for their being innovative, so it is managers' duty to make innovative behavior more feasible by providing advice, showing interest, and communicating that failure is sometimes inevitable but essential for the learning that will ensure future success. IBM's “Emerging Business Opportunity” program can also serve as an example for advice provision since each idea which is pursued in the program is accompanied by the mentorship of an IBM top manager who is supposed to



give technical and managerial advice, to connect the team to other people internally and externally and to make sure that the team has sufficient resources (O'Reilly et al., 2009).

### **Limitations and Avenues for Further Research**

The present research has several limitations that provide avenues for future research. First, while research indicates that national borders are still often a suitable approach to defining cultural entities (Minkov & Hofstede, 2012), modern life provides opportunities through the internet, travel, and international education to gain exposure to cultural forces from other than the home nation early in the cultural socialization process (Leung, Bhagat, Buchan, Erez, & Gibson, 2005). As a result, a “global culture” may be developing that blurs national cultural borders. Future studies could investigate this issue by conducting more complex experiments with subsets of individuals who have backgrounds in more than one culture.

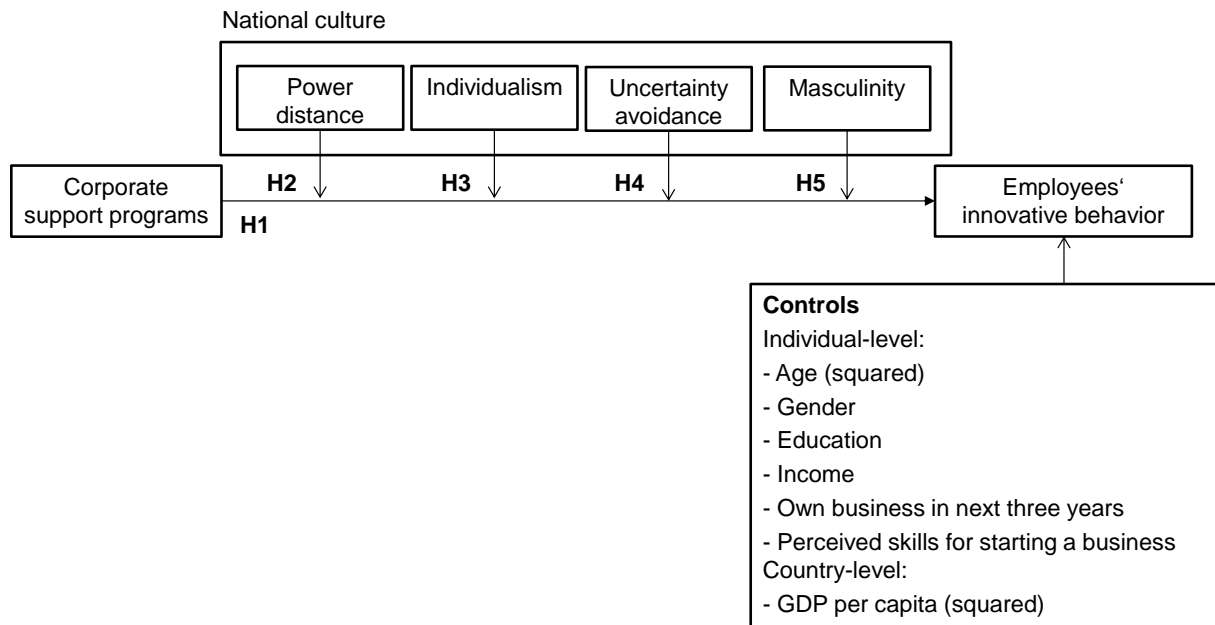
Second, while our research is among the first to examine a moderator of the relationship between management practices and employees’ innovative behavior, its examination of possible moderators is far from exhaustive. Many more moderators may be at work, including the organizational structure and team dynamics. Employees’ perceptions of the feasibility or desirability of innovative behavior is likely to be more positive when immediate colleagues are willing to support the pursuit of innovation. Future studies could also examine in how far corporate cultures interact with corporate support programs and especially with national cultural dimensions. The interaction between corporate and national culture could be informed by Leung et al.’s (2005) view on culture as a multi-layer phenomenon whereby corporate and national culture are two major layers which mutually impact each other (see also Deshpandé & Farley, 2004 for an empirical study on this topic).

Third, since corporate support facilitates employees’ innovative behavior, particularly in the low power distance and individualistic cultures that are often found in Western countries (as in Germany in our study 2), the question concerning the parallel antecedents in

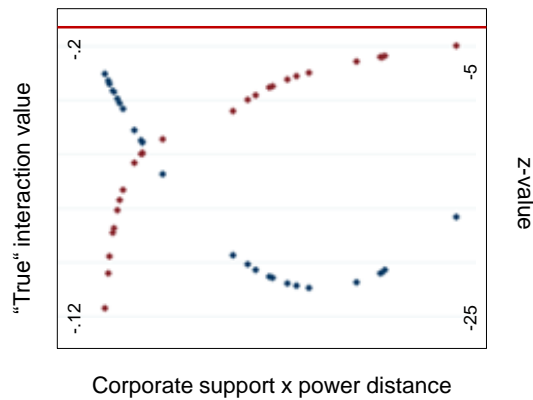
the Asian contexts arises. Future research could build a model from an Asian perspective to determine how employees' innovative behavior can be facilitated in these contexts.

## FIGURE AND TABLES

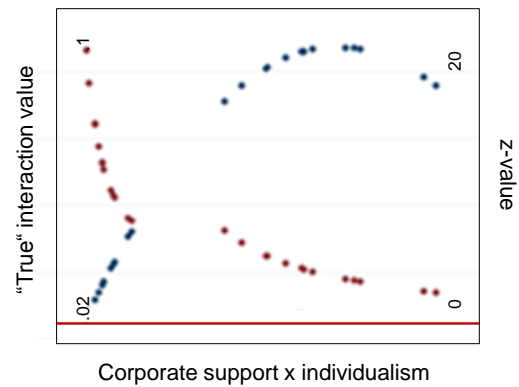
**Figure 1.** Research model



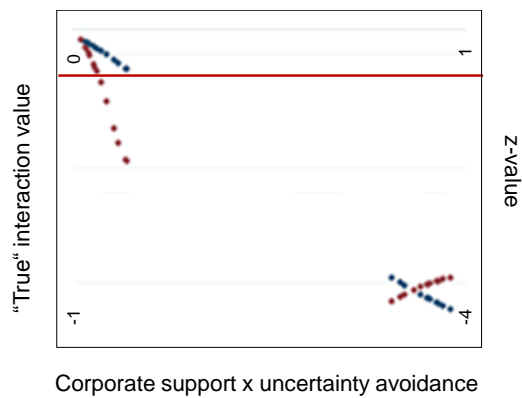
**Figure 2a.** The interaction effect of power distance and corporate support programs on employees' innovative behavior<sup>a</sup>



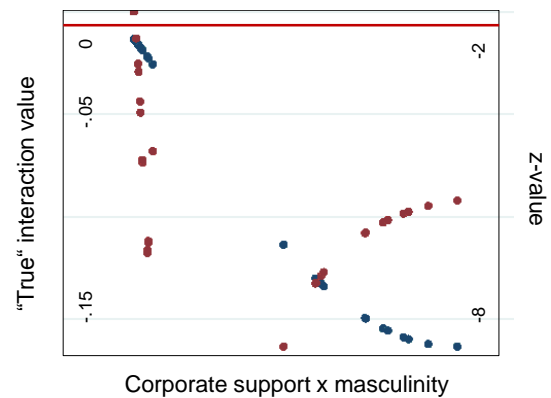
**Figure 2b.** The interaction effect of individualism and corporate support programs on employees' innovative behavior<sup>a</sup>



**Figure 2c.** The interaction effect of uncertainty avoidance and corporate support programs on innovative behavior<sup>a</sup>



**Figure 2d.** The interaction effect of masculinity and corporate support programs on employees' innovative behavior<sup>a</sup>



<sup>a</sup> Red lines depict the z-values, blue lines the "true" interaction value.

**Table 1.** Sample composition (study 1)

<b>Employees' innovative behavior</b>		
Yes	2,846	20%
No	11,059	80%
<b>Gender</b>		
Male	7,483	54%
Female	6,422	46%
<b>Age (in years)</b>		
16-29	3,313	24%
30-39	3,589	26%
40-49	3,727	27%
50-59	2,623	19%
60 or above	552	4%
<b>Post-secondary education</b>		
Yes	6,733	49%
No	7,062	51%
<b>Income situated in upper 33% of GEM</b>		
Yes	6,101	49%
No	6,315	51%
<b>Own business in next three years</b>		
Yes	2,561	19%
No	10,849	81%
<b>Perceived skills for starting a own business</b>		
Yes	5,745	42%
No	7,782	58%

**Table 2:** Country overview, including the scores from Taras et al. (2012) and means of corporate support and innovative employee behavior from study 1

<b>Country</b>	<b>Power Distance</b>	<b>Individualism</b>	<b>Uncertainty Avoidance</b>	<b>Masculinity</b>	<b>Means of corporate support</b>	<b>Means of innovative behavior</b>
Australia	-.79	.98	-.47	.50	.74	.19
China	.18	.02	-.08	-.39	.77	.12
Germany	-.77	.40	-.32	-.33	.68	.33
Greece	.36	-.08	.70	-1.2	.39	.12
Hungary	.03	-.06	.69	1.07	.69	.22
Korea	.61	.45	-.53	.46	.62	.18
Malaysia	.21	-.93	-.64	-.11	.48	.03
Netherlands	-1.33	1.07	-.83	-.87	.75	.28
Poland	-.17	-.24	.48	-.10	.58	.28
Romania	-.58	-.44	.34	-.58	.67	.24
Thailand	.45	-.73	-.27	-.64	.50	.11
Turkey	-.06	-.45	.11	.57	.75	.07
United Kingdom	-.81	.33	-.22	.58	.74	.14

**Table 3.** Descriptives and correlations (study 1)

Construct	Mean	Std Dev	Min	Max	1	2	3	4	5	6	7	8				
1. Employees' innovative behavior	.20	.40	0	1	1.00											
2. Corporate support programs	.67	.47	0	1	.24 ***	1.00										
3. Power distance	-.37	.59	-1.33	.61	-.15 ***	-.12 ***	1.00									
4. Individualism	.18	.59	-.93	1.07	.13 ***	.13 ***	-.72 ***	1.00								
5. Uncertainty avoidance	-.18	.47	-.83	.70	-.03 **	-.06 ***	.48 ***	-.53 ***	1.00							
6. Masculinity	-.16	.59	-1.2	1.07	-.05 ***	.05 ***	.23 ***	-.10 ***	.22 ***	1.00						
7. Age	39.44	11.69	16	81	.05 ***	-.04 ***	-.14 ***	.11 ****	-.04 ***	-.01	1.00					
8. Gender	.54	.50	0	1	.06 ***	-.00	.09 ***	-.12 ***	.02 *	.05 ***	-.01	1.00				
9. Education	.49	.50	0	1	.15 ***	.10 ***	.05 ***	.05 ***	.02 **	.02 *	-.05 ***	-.05 ***	1.00			
10. Income	.51	.50	0	1	.16 ***	.11 ***	-.04 ***	.03 ***	-.02 *	.07 ***	.06 ***	.05 ***	-.05 ***	1.00		
11. Own business in next three years	.19	.39	0	1	.09 ***	.05 ***	.18 ***	-.13 ***	.13 ***	-.01	-.17 ***	.05 ***	-.05 ***	-.05 ***	1.00	
12. Perceived skills for starting own business	.42	.49	0	1	.17 ***	.07 ***	-.00	-.02 **	.10 ***	.00	.02 *	.13 ***	.05 ***	-.05 ***	-.05 ***	1.00
13. Country GDP per capita	29,034	19,698	5,394	65,477	.13 ***	.07 ***	-.78 ***	.87 ***	-.55 ***	-.06 ***	.15 ***	-.08 ***	-.08 ***	-.08 ***	-.08 ***	1.00
9	10	11	12	13												

+ p&lt;0.1, \* p&lt;0.05, \*\* p&lt;0.01, \*\*\* p&lt;0.001

**Table 4.** Multilevel logit regression analysis with employees' innovative behavior as dependent variable (regression coefficients) (study 1)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
N	11,560	11,560	11,560	11,560	11,560	11,560	11,560
<i>Individual-level controls</i>							
Age	0.026 +	0.033 *	0.033 *	0.033 *	0.033 *	0.033 *	0.032 *
Age <sup>2</sup>	-0.000	-0.000 +	-0.000 +	-0.000 +	-0.000 +	-0.000 +	-0.000 +
Gender	0.234 ***	0.244 ***	0.246 ***	0.246 ***	0.246 ***	0.244 ***	0.247 ***
Education	0.589 ***	0.552 ***	0.553 ***	0.556 ***	0.556 ***	0.555 ***	0.551 ***
Income	0.709 ***	0.632 ***	0.632 ***	0.631 ***	0.630 ***	0.629 ***	0.633 ***
Own business next three years	0.594 ***	0.617 ***	0.616 ***	0.618 ***	0.616 ***	0.616 ***	0.613 ***
Perceived skills for starting own business	0.629 ***	0.616 ***	0.615 ***	0.616 ***	0.616 ***	0.616 ***	0.616 ***
<i>Country-level controls</i>							
GDP per capita	0.000	0.000 +	0.000	0.000	0.000	0.000	0.000
GDP per capita <sup>2</sup>	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
<i>Main effect</i>							
Corporate support programs		1.630 ***	1.628 ***	1.508 ***	1.569 ***	1.591 ***	1.554 ***
<i>Interaction effects</i>							
Power Distance (PD)			-0.452	-0.238	-0.457	-0.463	-0.463
Individualism (IDV)			0.873 +	0.884 +	0.662	0.874 +	0.850 +
Uncertainty Avoidance (UAI)			0.548 +	0.539 +	0.546 +	0.804 *	0.564 +
Masculinity (MAS)			-0.224	-0.214	-0.218	-0.212	0.105
Corporate support programs x PD				-0.265 *			
Corporate support programs x IDV					0.253 +		
Corporate support programs x UAI						-0.321 *	
Corporate support programs x MAS							-0.393 **
<i>Random part estimates</i>							
Number of groups (countries)	13	13	13	13	13	13	13



Variance of random intercept <sup>a</sup>	0.36 (0.15)	0.36 (0.15)	0.20 (0.09)	0.20 (0.09)	0.20 (0.08)	0.21 (0.09)	0.20 (0.08)
<i>Model fit statistics</i>							
Number of predictors	9	10	14	15	15	15	15
Prob> $\chi^2$	***	***	***	***	***	***	***
AIC <sup>b</sup>	10,210.78	9,586.59	9,587.33	9,585.07	9,585.92	9,584.61	9579.51
LR test vs. logistic regression <sup>c</sup>	***	***	***	***	***	***	***
<i>Pseudo R2</i>							
McFadden	0.10	0.15	0.16	0.16	0.16	0.16	.16
McKelvey and Zavoina	0.17	0.29	0.32	0.32	0.31	0.32	.32

+ p<0.1, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

<sup>a</sup> Standard errors in parentheses

<sup>b</sup> Akaike's information criterion; smaller values indicate better model fit.

<sup>c</sup> A likelihood-ratio test tests whether the random-intercept model offers significant improvement over a linear regression model with fixed effects only

**Table 5.** Multilevel logit regression analysis with employees' innovative behavior as dependent variable (odds ratios) (study 1)<sup>a</sup>

Variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7	
N	11,560		11,560		11,560		11,560		11,560		11,560		11,560	
<i>Individual-level controls</i>														
Age	1.026	+	1.033	*	1.033	*	1.033	*	1.033	*	1.033	*	1.033	*
Age <sup>2</sup>	1.000		1.000	+	1.000	+	1.000	+	1.000	+	1.000	+	1.000	+
Gender	1.264	***	1.277	***	1.279	***	1.280	***	1.278	***	1.276	***	1.280	***
Education	1.802	***	1.737	***	1.738	***	1.744	***	1.743	***	1.741	***	1.735	***
Income	2.033	***	1.882	***	1.881	***	1.880	***	1.878	***	1.876	***	1.884	***
Own business in next three years	1.812	***	1.854	***	1.851	***	1.855	***	1.852	***	1.851	***	1.846	***
Perceived skills for starting own business	1.875	***	1.852	***	1.849	***	1.852	***	1.851	***	1.852	***	1.852	***
<i>Country-level controls</i>														
GDP per capita	1.000		1.000	+	1.000		1.000		1.000		1.000		1.000	
GDP per capita <sup>2</sup>	1.000		1.000		1.000		1.000		1.000		1.000		1.000	
<i>Main effect</i>														
Corporate support programs			5.104	***	5.096	***	4.519	***	4.800	***	4.908	***	4.732	***
<i>Interaction effects</i>														
Power Distance (PD)					0.636		0.788		0.633		0.629		0.647	
Individualism (IDV)					2.394	+	2.420	+	1.939		2.396	+	2.340	+
Uncertainty Avoidance (UAI)					1.730	+	1.715	+	1.726	+	2.234	*	1.758	+
Masculinity (MAS)					0.799		0.807		0.804		0.809		1.111	
Corporate support programs x PD							0.767	*						
Corporate support programs x IDV									1.288	+				
Corporate support programs x UAI											0.726	*		
Corporate support programs x MAS													0.675	**
+ p<0.1, * p<0.05, ** p<0.01, *** p<0.001														

<sup>a</sup> Random part estimates, model fit statistics, and Pseudo R2-values remain the same as in Table 5

**Table 6a.** Descriptives and correlations in the sample from Germany (study 2)

Construct	Mean	Std Dev	Min	Max	1	2	3	4	5	6	7
1. Feasibility	4.80	1.409	1.00	7.00	1.00						
2. Desirability	5.15	1.48	1.00	7.00	.78	1.00					
3. Innovative employee behavior	5.23	1.23	1.00	7.00	.75	.73	1.00				
4. Proactive personality	4.96	1.31	2.00	7.00	.65	.67	.71	1.00			
5. Hierarchy level	4.51	2.22	1.00	9.00	-.01	.08	-.01	-.01	1.00		
6. Age of respondent	27.78	5.93	21.00	40.00	.15	.00	.15	.08	.07	1.00	
7. Industry (1=service)	.32	.39	0.00	1.00	.03	-.04	.03	.01	.03	.12	1.00

**Table 6b.** Descriptives and correlations in the sample from China (study 2)

Construct	Mean	Std Dev	Min	Max	1	2	3	4	5	6	7
1. Feasibility	4.73	1.07	2.00	7.00	1.00						
2. Desirability	5.04	.08	3.00	7.00	.55	1.00					
3. Innovative employee behavior	4.97	1.19	2.00	7.00	.51	.53	1.00				
4. Proactive personality	4.81	.97	3.00	7.00	.56	.23	.29	1.00			
5. Hierarchy level	3.90	1.27	2.00	7.00	-.17	.10	.03	.00	1.00		
6. Age of respondent	30.77	4.69	26.00	40.00	.07	.11	-.12	.00	-.02	1.00	
7. Industry (1=service)	.38	.49	0.00	1.00	-.09	.04	.00	.11	-.10	-.16	1.00

**Table 7.** Findings on regression analysis on experimental data in Germany and China (study 2)

Relationships	Germany (N = 101)						China (N = 94)					
	Time provision		Budget provision		Advice provision		Time provision		Budget provision		Advice provision	
	Baseline	With mediation	Baseline	With Mediation	Baseline	With mediation	Baseline	With mediation	Baseline	With mediation	Baseline	With mediation
<i>Controls</i>												
Age -> IB	.091	.006	-.002	.018	.032	.026	-.031	-.023	-.221	-.053	-.304**	-.039
Personality -> IB	.720***	.442***	.707***	.459***	.667**	.436***	-.231*	-.390	.354**	.282*	-.252	.229*
Hierarchy -> IB	.055	.000	.001	-.001	.037	.026	-.138	-.102	-.110	-.113*	-.132**	.050
Industry -> IB	.065	.225	.139	.020	.241**	.112	.192*	-.372*	-.182*	-.192	-.093	-.092
<i>Independent variable</i>												
CS -> IB	.000	-.004	.220*	.132	.135	.095	-.197*	-.280	-.008	-.001	-.441**	-.093
<i>Mediators</i>												
Feasibility -> IB	-	.250*	-	.182*	-	.208**	-	.361***	-	.144	-	.183
Desirability -> IB	-	.337**	-	.282**	-	.191**	-	.759***	-	.612***	-	.829***
CS -> Feasibility	-	.551***	-	.639***	-	.384**	-	-.108	-	-.065	-	-.032
CS -> Desirability	-	.228	-	.393**	-	.193	-	-.167	-	-.232	-	-.193
<i>Test of Mediation</i>												
Sobel-test <sub>Feasibility</sub>		z=1.91**		z=1.96**		z=1.74*		z=.04		z=.05		z=.48
Sobel-test <sub>Desirability</sub>		z=1.67*		z=2.05**		z=1.33		z=-.27		z=-.37		z=-.04

IB = Innovative employee behavior; CS = Corporate support program; \*\*\* p < .01; \*\* p < .05; \* p < .1

## **APPENDIX**

### **Appendix A: Background Information and Manipulations of Study 2**

#### ***Initial background information***

For three years you have been with your current employer, a firm called Securitec, which produces security software for commercial firms. You have worked in several departments, including research and development, product management, and sales, so you have developed a good overview of the entire firm. In the firm's industry environment, a lot has changed during the last few years. Some competitors have disappeared while start-up firms have entered the scene and taken market share from your employer. Your employer used to be an innovative player in the industry but has lost its grip on innovation during the last few years.

#### ***Sudden emergence of a new situation***

During the last several weeks you have been responsible for scanning your firm's environment. This task currently takes all of your time and effort and is likely to take several more months. Yesterday you recognized that a particular customer need is emerging: Private users' increasing use of social media and cloud computing requires better security software. You believe that there is a big end consumer (B2C) market for security software, but Securitec offers solutions only to corporate customers (B2B)—solutions that are too comprehensive for private users. However, when you worked in the research and development department, you wrote a software code that could be the foundation for a revolutionary security software offering in the B2C market.

#### ***Manipulation of corporate support program***

No support:

Your immediate supervisor does not actively support individual innovative initiatives. If you want to be creative and work on and push innovative ideas for new goods or services, you can do so after hours on your own and at your own expense.

Time provision:

To encourage innovation, your immediate supervisor tells you that there is a new corporate policy that allows you to spend 20 percent of your work time on your own innovation projects for new goods and services. Your other regular tasks are reduced accordingly.

Budget provision (manpower and financial means):

To encourage innovation, your immediate supervisor tells you that there is a new corporate policy that allows some employees, including you, to apply for and obtain a specific budget (including financial resources and other team members with required expertise) to develop and realize your own innovative ideas for new products or services.

Advice provision:

Your supervisor sets up a meeting with you and explains that you have his or her full support – in terms of both advice and backing within the organization – when you have a good, innovative idea that you would like to develop, test, promote in the firm, and bring to market as a new product or service.

## Appendix B: Multi-item measures employed in study 2

Construct	Items
Feasibility judgments (based on Krueger (1993))	<p>Regarding the situation as described and offer of support for developing your innovative ideas in the firm described, please indicate your level of agreement with each of the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree):</p> <ul style="list-style-type: none"> <li>• I do not consider it hard to implement the idea</li> <li>• I see good chances of success for the implementation of my idea</li> <li>• I am not overworked to implement the idea</li> <li>• I know enough to pursue my idea and make it happen</li> <li>• I am very sure of myself</li> </ul>
Desirability judgments (based on Krueger (1993))	<p>Regarding the situation as described and offer of support for developing your innovative ideas in the firm described, please indicate your level of agreement with each of the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree):</p> <ul style="list-style-type: none"> <li>• I would love pursuing the idea</li> <li>• I am not tense at all in pursuing this idea</li> <li>• I am very enthusiastic about pursuing this idea</li> </ul>
Employees' innovative behavior (Janssen, 2000; Stock, 2015)	<p>Regarding the situation as described and offer of support for developing your innovative ideas in the firm described, please indicate your level of agreement with each of the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree):</p> <ul style="list-style-type: none"> <li>• I would be highly engaged in generating new solutions for my idea to develop a new product.</li> <li>• I would create new ideas and develop an actual product.</li> <li>• I would search out new work methods, techniques, or instruments to push my idea and develop an actual product.</li> <li>• I would transform my innovative idea into useful actual applications and products.</li> <li>• I would evaluate the utility of my innovative idea.</li> </ul>
Proactive personality (based on Bateman and Crant (1993))	<p>Please indicate your level of agreement with each of the following statements using a scale from 1 (strongly disagree) to 7 (strongly agree):</p> <ul style="list-style-type: none"> <li>• No matter what the odds, if I believe in something I will make it happen</li> <li>• I love being a champion for my ideas, even against others opposition</li> <li>• I am excellent at identifying opportunities</li> <li>• If I believe in an idea, no obstacle will prevent me from making it happen</li> </ul>

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